

# Solid Waste

## Goal

Solid wastes will be dispositioned consistent with national policies for management of transuranic, low-level, low-level mixed and hazardous wastes. Hanford will continue to receive onsite and offsite wastes for disposal in the 200 Area.

## Fiscal Year 1998 Objectives

Key objectives included:

- commencing Waste Receiving and Processing (WRAP) facility glove-box operations
- shipping 17 cubic meters of mixed low-level waste to the Waste Experimental Reduction Facility at the Idaho National Engineering and Environmental Laboratory for incineration.



**The glovebox at the WRAP facility allows workers to safely handle transuranic radioactive objects.**

Nuclear and industrial operations at Hanford generated large amounts of solid waste containing hazardous and radioactive materials. Since 1944, 729,000 cubic meters (953,000 cubic yards) were disposed of at Hanford. At the end of the fiscal year, the site's inventory of radioactive waste awaiting disposal was 180 cubic meters (235 cubic yards) of low-level waste, 9,170 cubic meters (11,994 cubic yards) of mixed low-level waste, and 16,300 cubic meters (21,320 cubic yards) of transuranic waste. To protect the public and the environment, these materials must be disposed of in a safe manner. In the past, some of this material was buried without the level of protection now considered necessary for safe disposal.

Solid waste operations at Hanford will exhumate retrievably stored suspect transuranic waste, characterize it, and process it for appropriate on- or offsite disposal.

Hanford will continue to be a low-level waste and mixed low-level waste disposal facility for on- and offsite waste. Hanford's low-level burial ground is expected to be one of the final disposal sites in the DOE complex for low-level and mixed low-level waste. In addition, the site will continue to receive eight or nine naval nuclear reactor compartments per year over the next 15 years, adding to the 73 compartments already at Hanford.

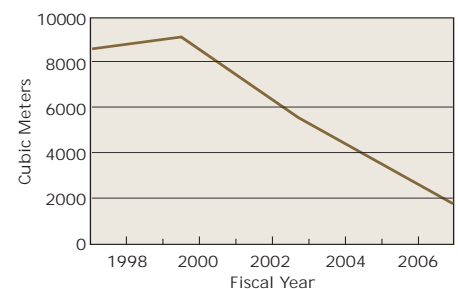
In fiscal year 1998, significant progress was made in four areas: reduction of risks to workers, the public, and the environment; reduction of inventory and materials to be cleaned up; reduction of costly mortgages; and innovative technology applications.

### Reduced Risks: WRAP Glovebox Operations

The Waste Receiving and Processing (WRAP) facility received glovebox operation startup authority on September 16, 1998, and began processing low-level and transuranic waste the next day. This followed months of fine-tuning and checking procedures as workers went through a detailed operational readiness review. WRAP is Hanford's first major solid waste processing facility and is the first in the DOE complex built to handle transuranic waste. Employees examine, characterize, verify, and package transuranic, low-level, and mixed waste at the facility for final disposition.

The initial wastes being processed by the facility have been stored at Hanford's Central Waste Complex, a series of 20 storage buildings. Several thousand containers of waste are currently stored in the buildings, and approximately 38,000 drums are stored in trenches at the burial grounds.

More than 70,000 drums of waste will be processed through the facility during its lifetime. Startup provides the pathway for shipment of transuranic waste out of the state for disposal; beginning in 1999, this waste will be shipped to the Waste



**Projected decrease in solid waste stored at Hanford, 1997 to 2007.**

Isolation Pilot Plant in New Mexico for permanent underground disposal. Low-level and mixed low-level waste will be safely disposed of onsite.

On another front in fiscal year 1998, Waste Management Hanford contracted with the Allied Technology Group for non-thermal treatment of mixed waste. Treatment will begin by June 1999 for a 5-year period. In addition, Allied has also contracted with Waste Management Hanford to perform thermal treatment under a 5-year contract. Waste shipments are to begin in November 2000.

Risk reduction has paid off for the workers at Waste Management Hanford. They surpassed one million work hours without a lost time injury and reduced the Occupational Safety and Health Administration recordable injury rate by 50 percent.

### Reduction of Inventory and Materials: Mixed Waste Treatment

The Richland and Idaho Operations Offices started joint mixed waste treatment. Idaho accepted 17 cubic meters (22 cubic yards) of radioactive mixed waste that will be incinerated at the Waste Experimental Reduction Facility. The residue, a much smaller volume, will be stabilized and buried at Hanford in the mixed waste disposal trenches.

Also during the year, over 2,300 kilograms (2.5 tons) of lead bricks from T Plant were surveyed or decontaminated for release. Mixed waste inventory was sorted and decontaminated as necessary. Waste that met the free release criteria was sold.

### Reduction and Elimination of Costly Mortgages: Waste Management

Several actions will reduce surveillance and maintenance costs across the site:

- Waste Management Project cost efficiencies funded \$5.7 million of previously unfunded work.
- Hanford played a key role in the complex-wide Environmental Management Integration effort to reduce national waste management costs.
- Diversified Scientific Services, Inc., incinerated 11,400 liters (3,000 gallons) of tributyl phosphate waste from B Plant.
- Solid waste disposal support was provided to deactivation of B Plant and buildings 324 and 327.

### Innovative Technology Applications: New Methods Cut Waste, Risk

The Tri-Cities/Columbia Basin Chapter of the Project Management Institute selected the 222-S Project W-087, Radioactive Line Replacement, as the 1997 Project of the Year. The project received the award by completing construction under budget, beating the Tri-Party Agreement milestone date for completion, and putting the transfer system into operation, while minimizing worker exposure to hazards. The key to the success of the project was the creation of a team environment and reliance on strong worker involvement to identify improvement initiatives.

Also, the WRAP facility deployed four technologies in fiscal year 1998:



***The nuclear reactor compartment from a decommissioned submarine is moved to a burial cell at Hanford.***

- The Boxed Waste Assay System performs nondestructive assay of the radionuclides in waste boxes without opening the boxes. This reduces inspection time from days or weeks to a few hours.

- The Drum Delidder/Relidder Assembly remotely opens and reseals drums inside gloveboxes. The glovebox environment reduces the chances of worker exposure.

- The Glovebox Non-Destructive Packet Assay Monitor System characterizes packets removed from drums in the glovebox and determines the fissile content of each packet without opening the packet. The old system required each packet to be opened and a sample taken to a laboratory for analysis, a process that was often measured in weeks.

- The Glovebox X-Ray System for Non-Destructive Examination of Packets allows operators to examine the contents of sealed packets to determine the appropriate disposal route. This saves the time that would be required to manually open and examine the packets.

### ***RL Receives Two DOE Awards***

Pollution Prevention Awards were given for Affirmative Procurement for excelling in the purchasing of recycled/reusable products, and for excellence in working with entities such as the City of Richland, universities, and small local businesses to encourage them to recycle and reuse products and to enhance their overall pollution prevention program.

## ***Accomplishments***

- The Waste Receiving and Processing (WRAP) facility began processing waste, including transuranic waste.
- Joint radioactive mixed waste incineration operations were initiated with the Idaho Operations Office.
- DOE Pollution Prevention Awards were given to RL.

## ***Near-Term Challenge***

The Carlsbad Area Office needs to open the transuranic waste transportation corridor between Hanford and the Waste Isolation Pilot Project. Delays in opening the transportation corridor may create a shortage of storage capacity in waste storage buildings at Hanford.



***Nondestructive analysis equipment examines the contents of a sealed waste drum in the WRAP facility.***